CORPUS CHRISTI ARMY DEPOT
ACTIVITY BASED COSTING (ABC)
OVERVIEW

Agenda

- Activity-Based Costing (ABC) Methodology
  at Corpus Christi Army Depot

- ABC Data (Sample)

- Next Steps

ABC Methodology

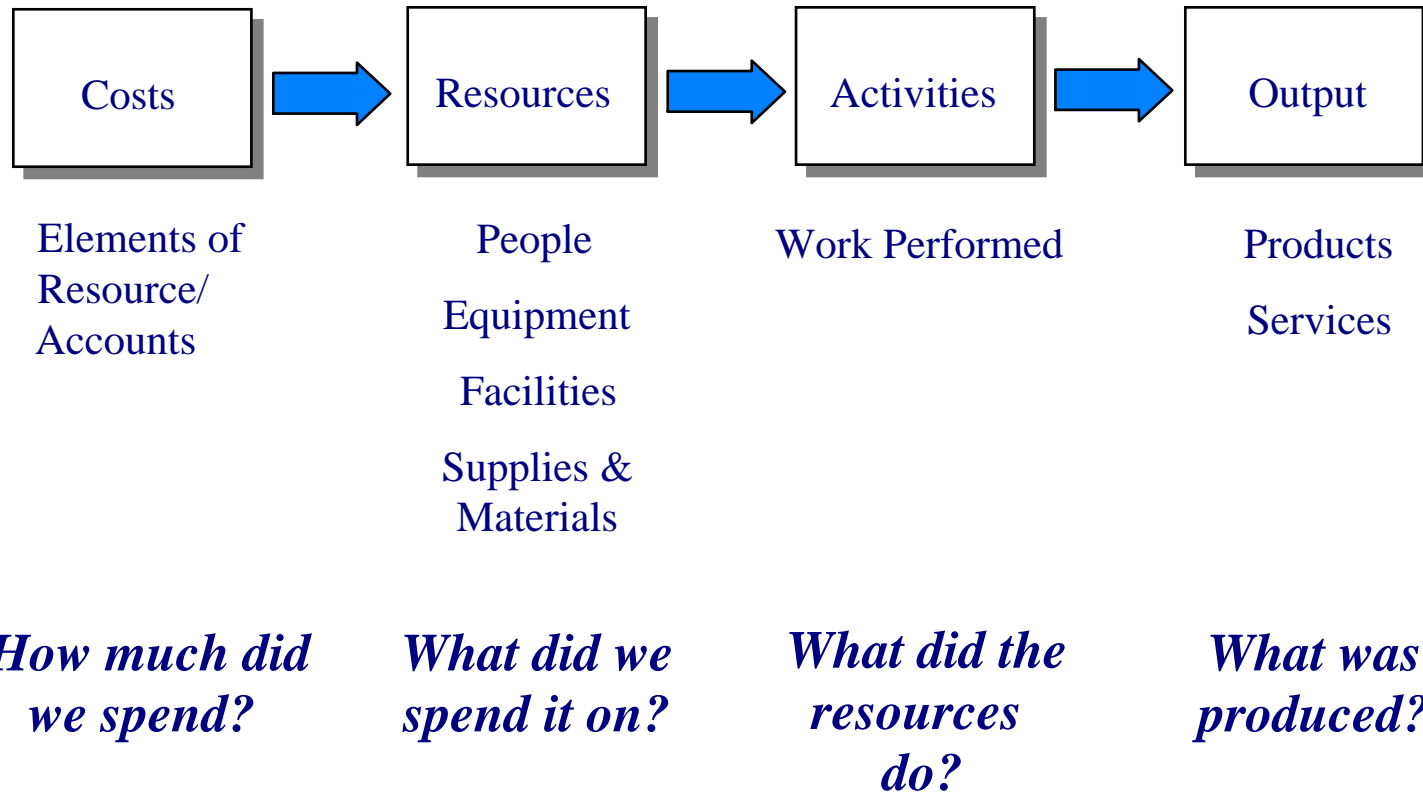# What is Activity-Based Costing (ABC)?

ABC is a cost management tool which:

- Identifies the activities and processes performed in an organization
- Determines the costs of these activities and processes
- Links these activities and processes to products or services and to customers
- Establishes performance measures
- Determines activity attributes

ABC identifies costs for work being performed and links the work performed to products

The ABC Model ➤

The ABC Model

Costs	→	Resources	→	Activities	→	Output

Elements of Resource/ Accounts	People	Work Performed	Products
	Equipment		Services
	Facilities		
	Supplies & Materials		

How much did we spend?　　*What did we spend it on?*　　*What did the resources do?*　　*What was produced?*

Traditional vs. Activity View of Cost at CCAD →

Traditional vs. Activity View of Cost at CCAD

Traditional Accounting or Accounts View

Salaries & Benefits	$700,000
Technology	100,000
Supplies	200,000
Equipment	300,000
Facilities	400,000
Total	**$1,700,000**

Activity-Based Costing (ABC) View

Induct Engine	$200,000
Perform Engine PSA	400,000
Perform Engine Document	150,000
Evaluate & Examine Engine	350,000
Disassemble Engine	600,000
Total	**$1,700,000**

The traditional view shows how much you spent,
the activity view shows what you spent it on.

Note: The values are provided as an example only and do not reflect actual CCAD data.
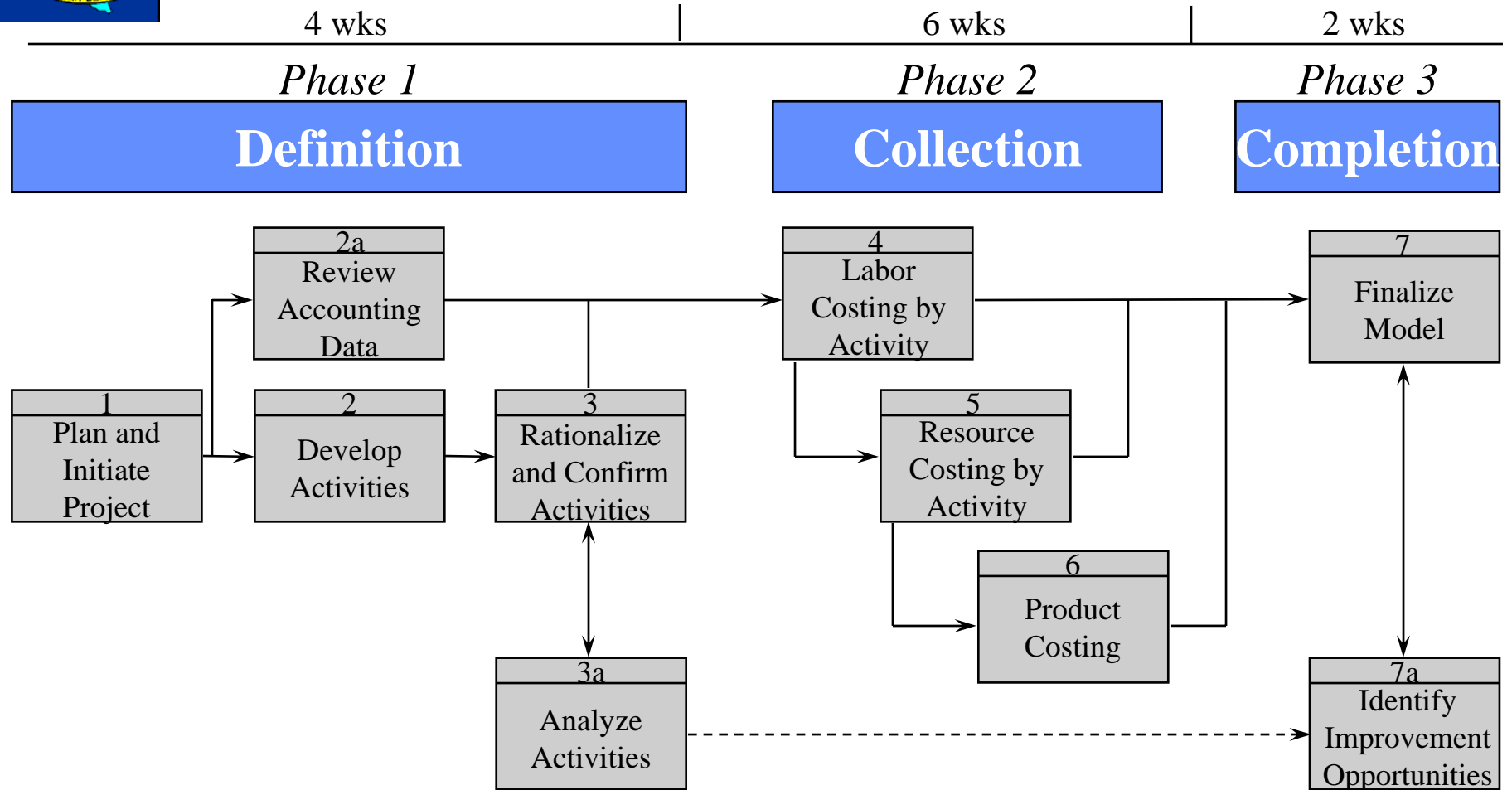
Implementation of ABC at CCAD ➔

Implementation of ABC at CCAD

- 12 week effort

- Full-time Core Team (CCAD/Contractor Personnel)

- POCs established within each Directorate

- Continuous education and status updates throughout project

- Create organizational ownership

- Activity Workshops to define work performed

- Elements of Resource (EOR) identified and allocated to activities

- Entire Depot surveyed

- Commercial ABC software utilized

"Sweat equity"

ABC Methodology ➡

ABC Methodology

4 wks	6 wks	2 wks

Phase 1	*Phase 2*	*Phase 3*
Definition	**Collection**	**Completion**

2a	4	7
Review Accounting Data	Labor Costing by Activity	Finalize Model

1	2	3	5
Plan and Initiate Project	Develop Activities	Rationalize and Confirm Activities	Resource Costing by Activity

6
Product Costing

3a	7a
Analyze Activities	Identify Improvement Opportunities

Implementing ABC

Implementation of ABC at CCAD ➡

Task 1 - Plan & Initiate Project

Plan & Initiate Project

Key Steps:

► Identify ABC Core Team
► Conduct ABC Team Training
► Develop Detailed Workplan
► Collect & Review Existing Activity Information
► Develop Communications Plan
  ► Meet with Union Representatives
  ► Write Article for *The Aircraftsman*
  ► Appear on *Inside CCAD*
  ► Develop Introductory Department Briefing
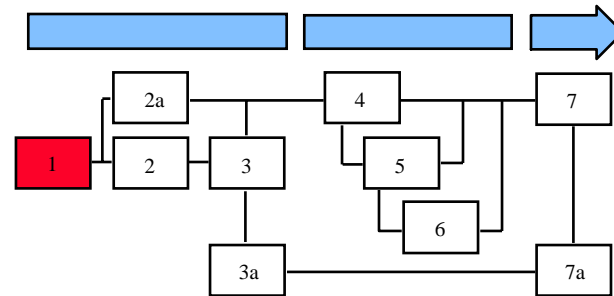
Deliverables:

► Detailed Workplan & Schedule
► ABC Training
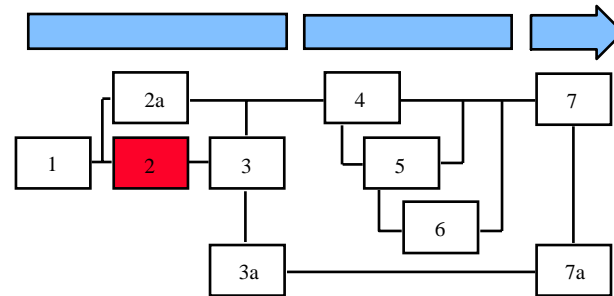
Implementing ABC

Task 2 - Develop Activities

Develop Activities

Key Steps:
- ➤ Identify & Brief Directorate POCs
- ➤ Brief Director & Division Chiefs on Activity Workshops
- ➤ Setup Groupware & Develop User Instructions
- ➤ Identify Activity Workshop Participants
- ➤ Schedule & Conduct Activity Workshops
- ➤ Develop Prelimary Activity Dictionary

Deliverables:
- ➤ Preliminary Activity Dictionary

Implementing ABC

Implementation of ABC at CCAD ➤
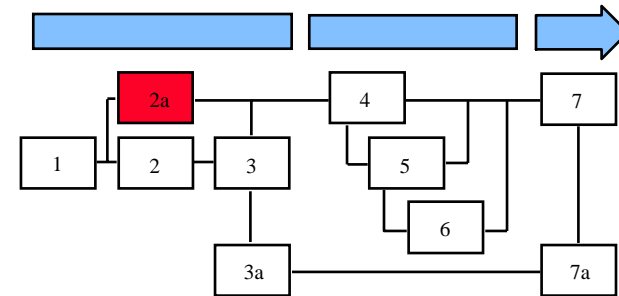
Task 2a - Review Accounting Data

Review Accounting Data

Key Steps:

► Obtain Work Center Level Elements of Resource (EOR) Data

► Determine EOR Roll-ups

► Load EOR Data into ABC Model

► Review Non-Labor EOR Data with Directorate Budget Analysts

► Identify EOR Account Reallocations

Deliverables:

► General Ledger Cost Data in ABC Model

► Non-Labor EOR Resource Drivers

Implementing ABC

Task 3 - Rationalize & Confirm Activities

Rationalize & Confirm Activities

Key Steps:

► Review/Rationalize Activities Cross Functionally

► Schedule/Conduct Activity Validation Meetings with Directors

► Develop Final Activity Dictionary with Tasks

► Load Processes/Activities into ABC Model

► Develop Labor Survey Scan Sheets

► Develop Preliminary Activity Drivers
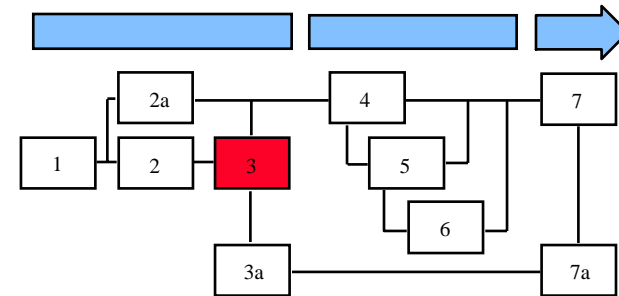
Deliverables:

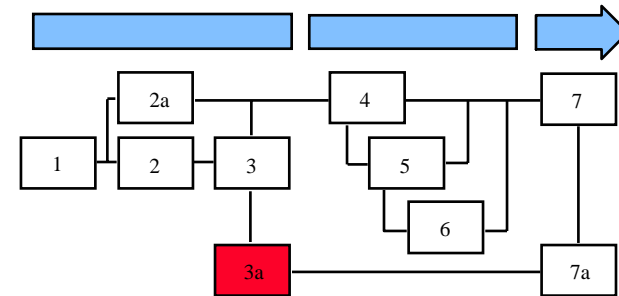► Final Activity Dictionary

Implementing ABC

Task 3a - Analyze Activities

Analyze Activities

Key Steps:

- ➤ Review Cost of Quality (COQ) Criteria
- ➤ Conduct COQ Analysis
- ➤ Review Value-Added/Non-Value Added (VA/NVA) Criteria
- ➤ Conduct VA/NVA

Deliverables:

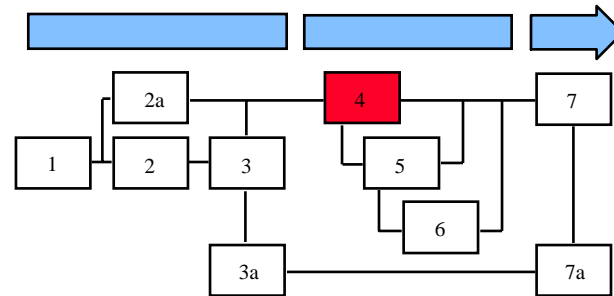- ➤ COQ Analysis
- ➤ VA/NVA

Task 4 - Labor Costing by Activity

Labor Costing by Activity

Key Steps:

➤ Brief Directorate and Division POCs
On Data Collection (Labor Surveys)

➤ Develop Survey Instructions

➤ Conduct Survey Administration Workshops

➤ Normalize Surveys

➤ Load Labor Resource Driver Data
in ABC Model

Deliverables:

➤ Initial Activity Cost Model

Task 5 - Resource Costing by Activity

Resource Costing by Activity

Key Steps:

► Identify Non-Labor Resources

► Quantify Non-Labor Resource Drivers

► Load Non-Labor Resource Driver Data in ABC Model
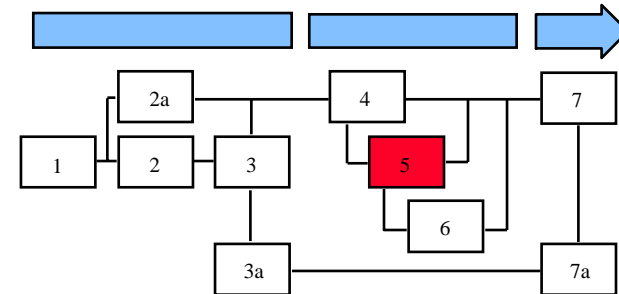
Deliverables:

► Initial Activity Cost Model

Implementing ABC

Task 7 - Finalize Model

Finalize Model

Key Steps:

➤ Validate Final ABC Model

➤ Calculate Final ABC Model

➤ Develop/Provide Final ABC Reports

➤ Develop/Provide Final ABC Briefing

➤ Provide Technology Transfer

Deliverables:

➤ Final ABC Model

➤ Final ABC Briefing

➤ Technology Transfer

Implementing ABC

ABC Data (Sample)

ABC Data (Sample)

ABC Data (Samples)

ABC Hierarchy

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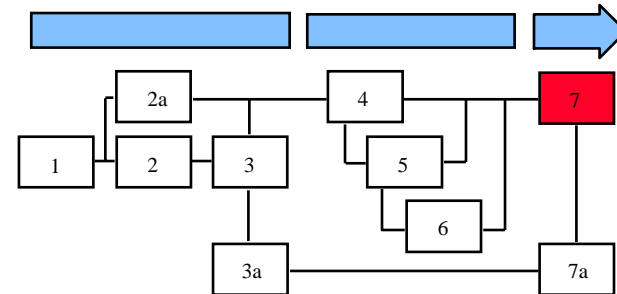**Core Business Process:** Cross functional processes that are the inherent basis of the organizations mission, linked to external customers

34

Process: A sequence or network of related and interdependent activities performed in support of the business. Processes have identifiable outputs

346

Activities: What people do in the organization. Activities consume resources to produce an output.

Tasks: Worksteps performed by individuals. The level at which cycle time analysis is performed

What we do and how we do it!

CCAD Activity Hierarchy - Sample

CORE PROCESS: OVERHAUL AND REPAIR COMPONENTS

PROCESS: OVERHAUL AND REPAIR ENGINE

Activity: Induct Engine
Activity: Perform Engine Pre-Shop Analysis
Activity: Prepare, Modify and Verify Engine Documentation
Activity: Evaluate & Examine Engine
Activity: Disassemble Engine
Activity: Route Engine or Components for Processing
Activity: Clean Engine
Activity: Repair or Overhaul Engine
Activity: Conduct Component Final Evaluation
Activity: Paint Engine
Activity: Assemble Engine
Activity: Inspect and Qualify Engine
Activity: Test Engine
Activity: Rework Engine
Activity: Sell Engine
Activity: Preserve and Pack Engine

Activity hierarchy
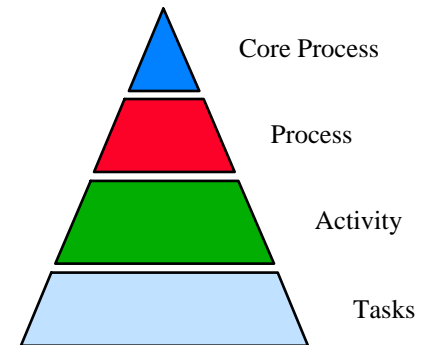
Core Process
Process
Activity
Tasks

CCAD Core Process Costs/Work Yrs. ➡

CCAD Core Process Costs/Work Yrs.

Total Costs ($Mil)   **Work Years**

Legend: ■ Cost ▨ Work Years

Categories (left axis 0–50, right axis 0–800):
- O/H & Rep Aircraft
- O/H & Rep Components
- Process & Manuf Part
- Spt Production
- Perform G&A Duties
- Maint Equip & Facility
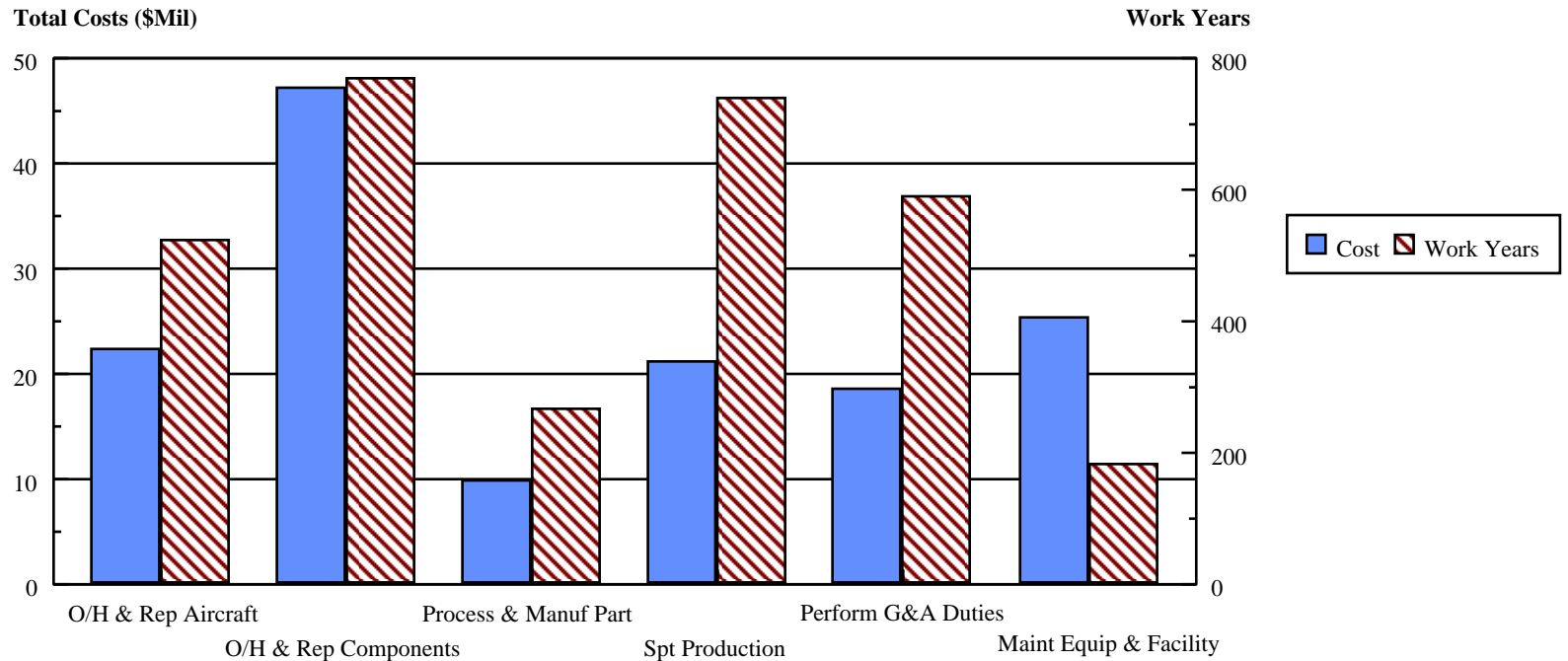
Primary:	O/H & Rpr Aircraft
	O/H & Rpr Components
	Process & Manufacture Parts
Support:	Support Production
	Perform General Admin Duties
Sustaining:	Maintain Equipment & Facilities

What do we do, how much does it cost, and how many people do it?

**CCAD "Overhaul & Repair Components"
Process Costs/Work Yrs.** ➝

"Overhaul & Repair Components" Process Costs/Wrk Yrs.

Total Costs ($Mil) / Work Years bar chart showing Cost and Work Years for:
OH & Rpr Engine, OH & Rpr Xsmn, OH Rpr Main Blade, OH & Rpr Tail Blade, OH & Rpr Rotate Elec, OH & Rpr Gearbox, OH & Rpr Hydraulics, All Other

Legend: ■ Cost ◨ Work Years
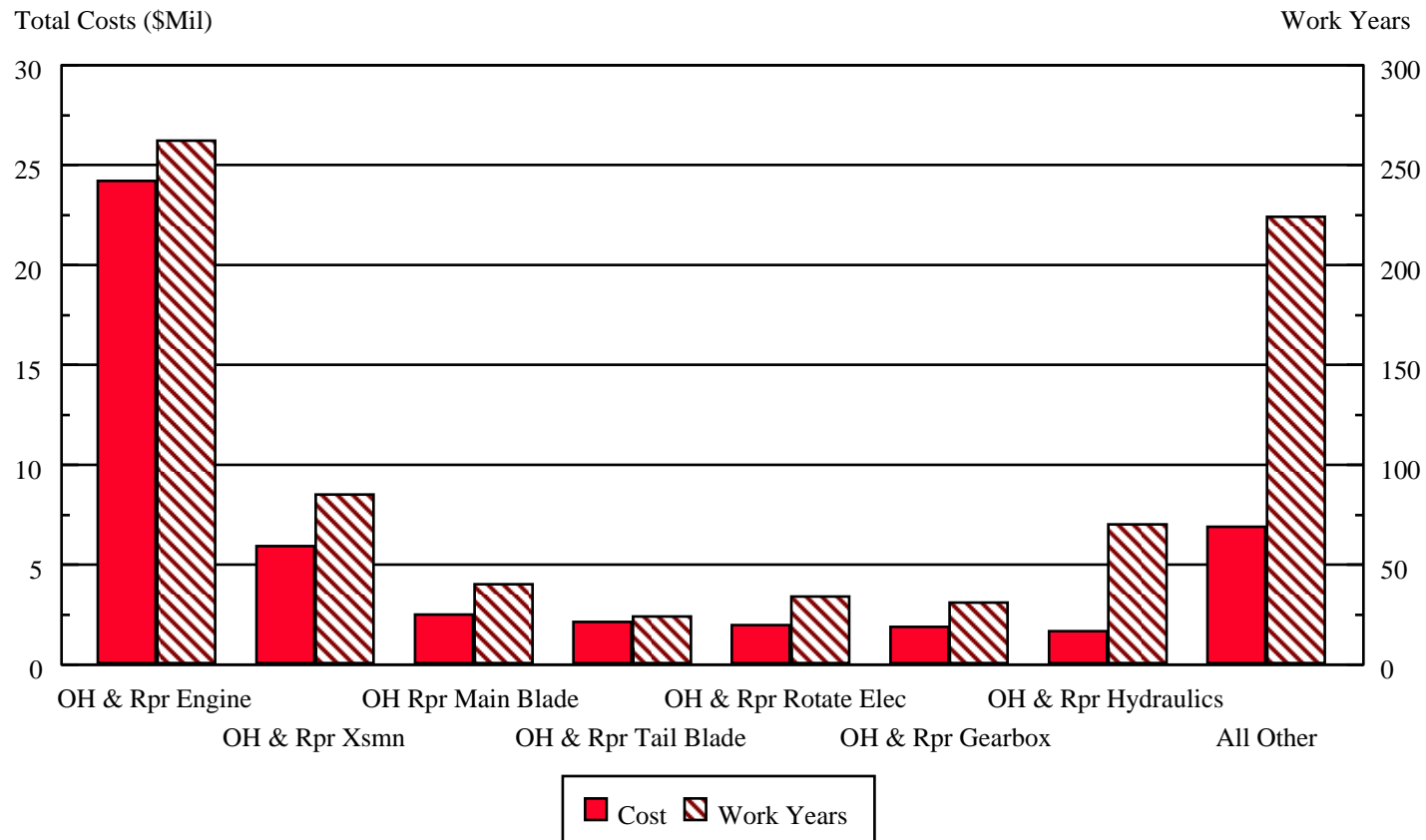
More detail at the process level

"Overhaul & Repair Components"
Performance Measures →

"Overhaul & Repair Components" Activity Drivers

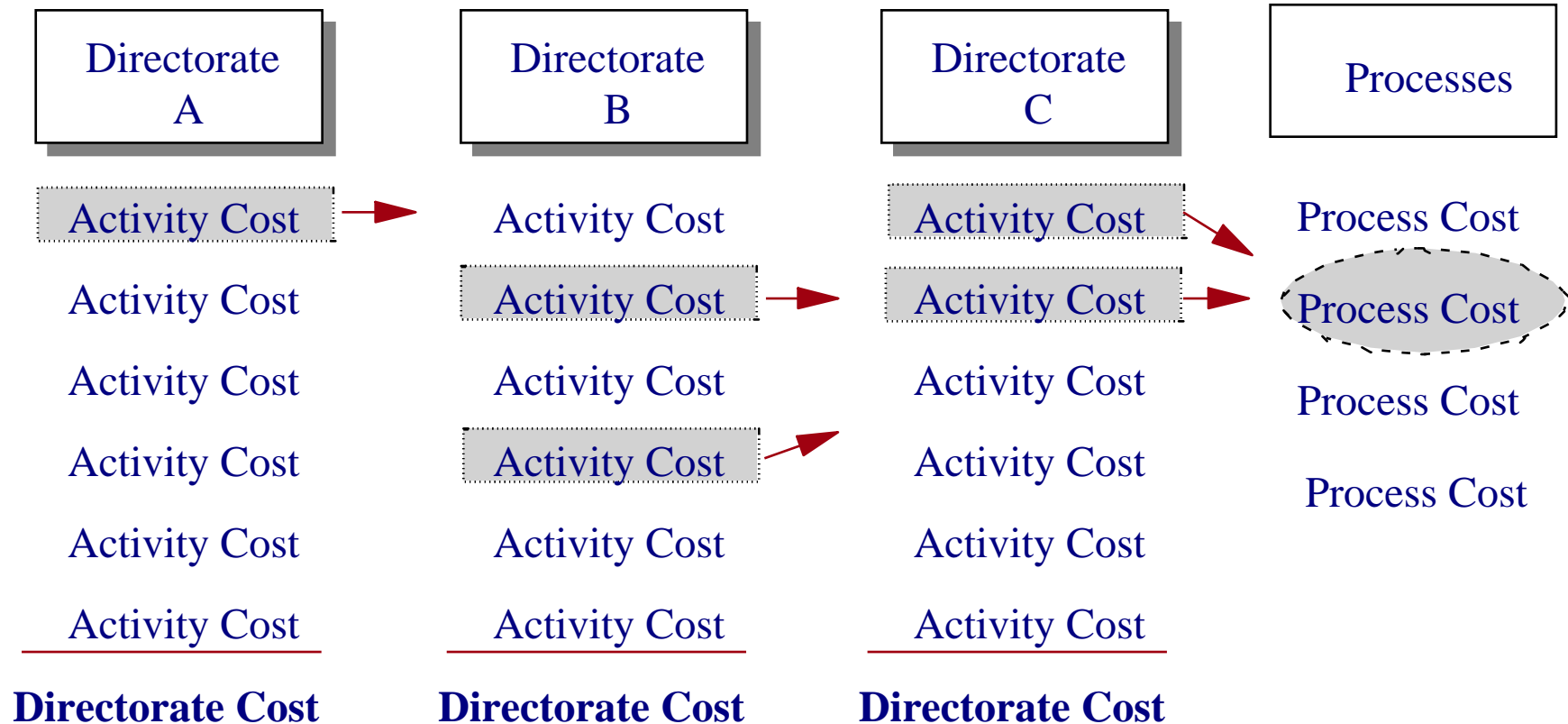| Processes	Performance Measure	Volume	Unit Cost
Overhaul and Repair Engine	# of engines repaired	207	116,845
Overhaul and Repair Avionics	# of avionics repaired	2,135	410
Overhaul and Repair Bearings	# of Bearings repaired	21,477	28
Overhaul and Repair Hydraulics	# of Hydraulics repaired	4,041	409
Overhaul and Repair Rotating Electric	# of rotating electric repaired	3,295	597
Overhaul and Repair Mechanicals	# of mechanicals repaired	5,857	193
Overhaul and Repair Instrumentation	# of instrumentation repaired	1,511	419
Overhaul and Repair Transmissions	# of transmissions repaired	201	29,532
Overhaul and Repair Gearboxes	# of gearboxes repaired	529	3,547
Overhaul and Repair Main Blades	# of main blades repaired	618	4,045
Overhaul and Repair Rotor Assembly	# of rotor assemblies repaired	NA	NA
Overhaul and Repair Tail Blade	# of tail blades repaired	348	6,160
Overhaul and Repair Tail Assembly	# of tail assemblies repaired	NA	NA
Overhaul and Repair Rotor Controls	# of rotor controls repaired	119	9,346

Cost measures only

Organizational vs. Process Costs →

Organizational vs. Process Costs

Directorate A	Directorate B	Directorate C	Processes
Activity Cost →	Activity Cost	Activity Cost ↘	Process Cost
Activity Cost	Activity Cost →	Activity Cost →	*Process Cost*
Activity Cost	Activity Cost	Activity Cost	Process Cost
Activity Cost	Activity Cost ↗	Activity Cost	Process Cost
Activity Cost	Activity Cost	Activity Cost	
Activity Cost	Activity Cost	Activity Cost	

Directorate Cost   **Directorate Cost**   **Directorate Cost**

*Process costs cross organizational lines*   **Cross-Functional Activity View** →

Cross-Functional Activity View

Activity - Perform Engine Pre-Shop Analysis

Work Center	Cost	Work Yrs
Engine PSA/Disassembly Div	$34,533	1.71
Equipment Engineering	1,533	.06
UH-60 Production Div #2	428	.02
CH-47/AH-64 Div #2	1,200	.05
CH-47/AH-64 Div #5	262	.01
Cross Service Acft Pdn Div #1	262	.01
Engine Quality Control Div	20,322	.96
Engine Svc Ctr/Rec Tech Assist	9,123	.54
T700 Engine Mod Assy	5,226	.34
T700 Engine Assy Div	4,018	.21
T700 Engine Compressor	16,548	.78
T700 Engine Fuel Co	16,561	1.20
T700 Engine Turbine	3,300	.16
Engine Testing Div	333	.01
Engine Turbine/Comp	10,859	.73
T53 Engine Assy Div	4,856	.35
T55 Engine Assy Div	7,087	.40
T63 Engine Assy Div	12,091	.62
T53/T55/T63 Eng Fuel Control	5,535	.32
Engine Fuel Comp Test Div	4,149	.20
Engine NDT Div	8,407	.29
Bearing Div	236	.01
Tooling Div	1,367	.06
	$168,247	**9.03**

Core Process

Process

Activity

Tasks
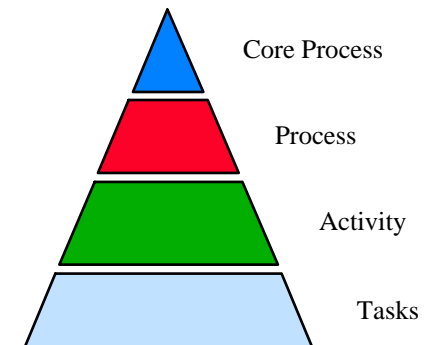
Activity costs captured across organizational boundaries

Work Center Activity View →

Work Center Activity View

Heat Treat Division - 5HD00

Activity	Cost	Work Yrs
Perform Heat Treat/Braze	$128,584	2.86
Develop/Manage Equipment	44,462	.51
Induct Parts/Components	14,870	.51
Perform Manufacturing Documentation	14,870	.51
Perform Foundry	77,324	2.63
NDI/NDT Parts	4,248	.14
Clean Local Manufacture Parts	14,870	.51
Manufacture/Repair Composites	16,994	.58
Manufacture Jigs & Fixtures	16,994	.58
Design/Manufacture Tool & Die	38,237	1.30
Inspect Parts/Components	2,124	.07
Test Parts/Components	15,295	.52
Sell Parts/Components	24,217	.82
Develop Cost Estimates	2,124	.07
Monitor/Coordinate Programs	849	.03
Research Technical Data	3,398	.12
Requisition/Order Parts	3,398	.12
Chase Parts	2,124	.07
Program/Setup Equipment	2,124	.07
Perform Facility Preventive Maintenance	1,699	.06
Perform Facility Corrective Maintenance	849	.03
Attend Meetings/Conferences	3,823	.13
Participate in Hearts	8,497	.29
Attend Training	3,398	.12
Perform Timekeeping	8,497	.29
Perform Housekeeping	7,419	.59
	$471,298	**13.00**
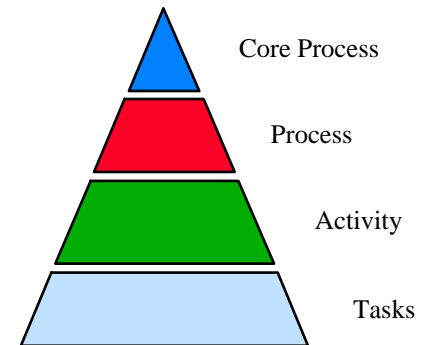
Activity cost captured at work center level

Core Process

Process

Activity

Tasks

Value Analysis Definitions →

Value Analysis Definitions (Activity Attribute)

CAUTION

Value Added

- Activities absolutely essential to satisfy customer needs

Non-Value Added

- Activities not absolutely essential to satisfy customer needs
- Not a judgment on inherent worth
- *Not all can or should be eliminated*

Mandated

- Activities required by higher authority (outside the organization)

Value assessment

**Value Added vs. Non-Value Added Decision Tree** ➤

Value Added vs Non-Value Added Decision Tree

How would you describe non-value added (NVA) analysis?

Through a series of questions we can determine if an activity adds value ...

- Could this activity be eliminated if some prior activity were done differently (or correctly?)

- Does the technology exist to eliminate this activity?

- Could this activity be eliminated without changing the form, fit or function of the product?

- Is this activity required by an external customer and will that customer pay for this activity?

Yes → NVA

No

Yes → NVA

No

Yes → NVA

No

No → NVA

Yes

VA
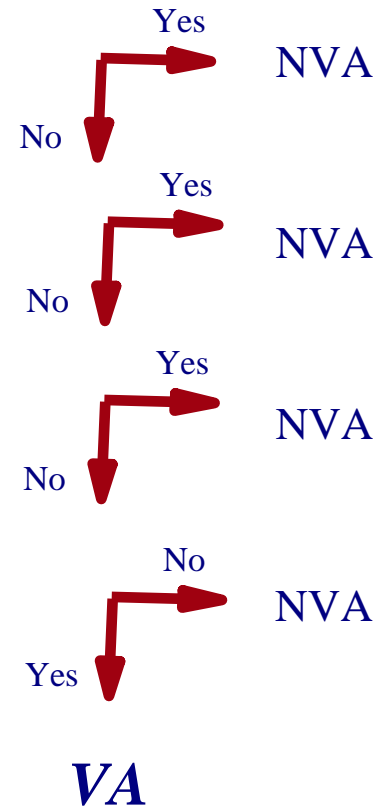
Is the work performed adding value to our work?

Cost of Quality →

Cost of Quality (Activity Attribute)

There are four categories in a COQ assessment:

Prevention:	Efforts to determine customer requirements and to ensure that those requirements are met. "Doing the job right the first time"

Appraisal:	Efforts to check whether the requirements are met before the product or service reaches the customer. "Identifying non-conforming output"

Internal Failure:	Rework before a service or product is provided to the customer. "Re-doing the effort"

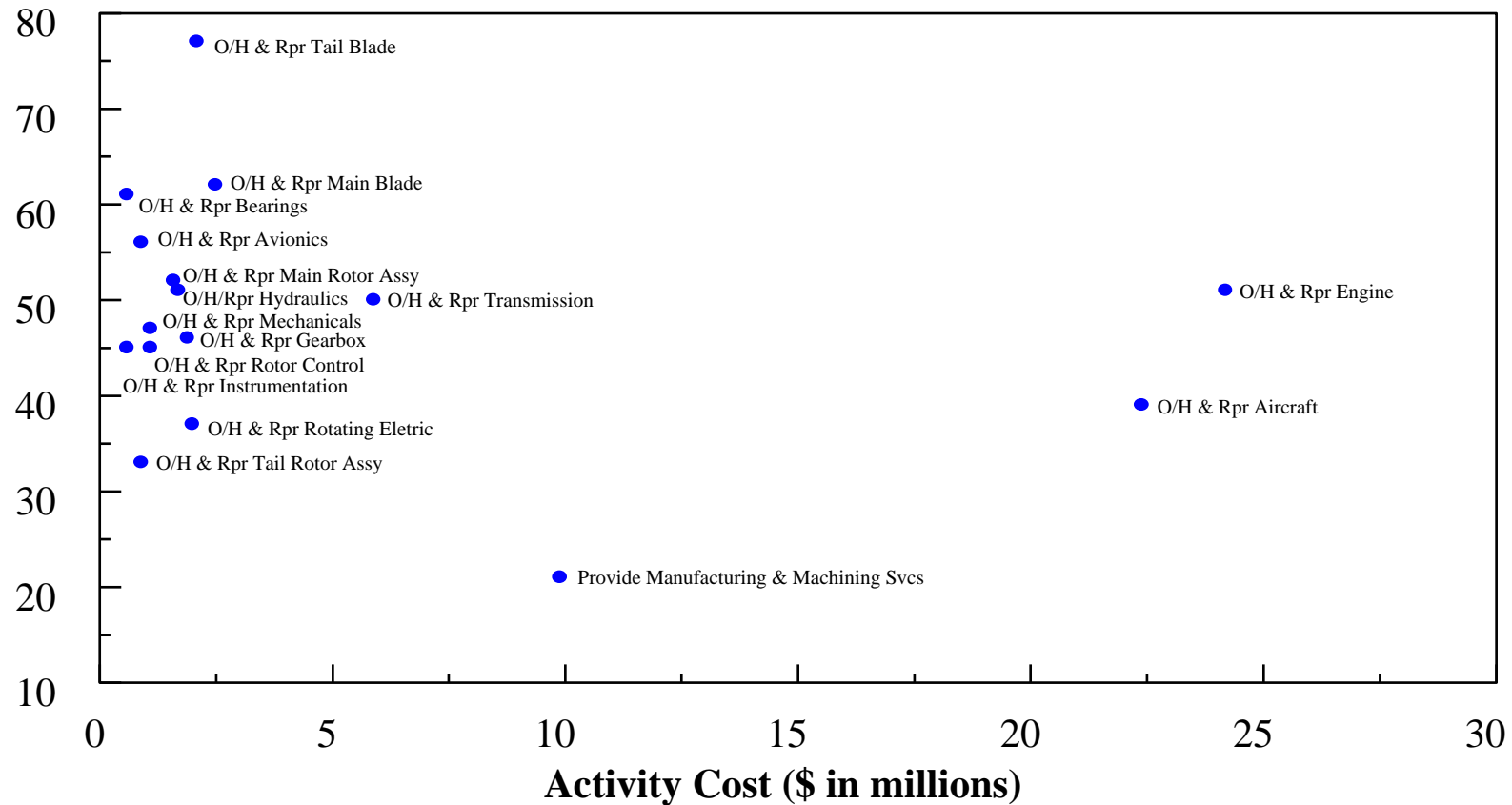|	
External Failure:	Rework after the product or service reaches the customer because requirements were not met. "Re-doing the effort"

Types of quality activities

Opportunity Matrix - Overhaul Components →

Opportunity Matrix - Overhaul Components

% Non-Value Added (by FTE)

- O/H & Rpr Tail Blade (~2, ~79)
- O/H & Rpr Main Blade (~2.5, ~63)
- O/H & Rpr Bearings (~0.7, ~62)
- O/H & Rpr Avionics (~0.8, ~57)
- O/H & Rpr Main Rotor Assy (~1.5, ~53)
- O/H/Rpr Hydraulics (~1.5, ~51)
- O/H & Rpr Transmission (~6, ~51)
- O/H & Rpr Engine (~24, ~51)
- O/H & Rpr Mechanicals (~1, ~48)
- O/H & Rpr Gearbox (~1.5, ~47)
- O/H & Rpr Rotor Control (~0.7, ~46)
- O/H & Rpr Instrumentation
- O/H & Rpr Aircraft (~22.5, ~40)
- O/H & Rpr Rotating Eletric (~1.5, ~38)
- O/H & Rpr Tail Rotor Assy (~0.7, ~34)
- Provide Manufacturing & Machining Svcs (~10, ~22)

Activity Cost ($ in millions)

*High NVA% and high cost are potential areas
for improvement*

Material Management ABC Data →

Material Management ABC Data

DIRECTORATES	Requisition/order parts, materials, supplies	Ship/receive parts, materials, supplies	Chase parts, materials, supplies	Store parts, materials, supplies	Manage/maintain supply systems	Perform inventory control	Distribute parts, materials, supplies	TOTAL:
				ACTIVITIES				
Staff Offices	$0	$0	$0	$0	$0	$0	$0	$0
Office of the Commander	$0	$0	$0	$0	$0	$0	$0	$0
Office of Equal Employment Opportunity	$0	$0	$0	$0	$0	$0	$0	$0
Public Affairs Office	$0	$0	$0	$0	$0	$0	$0	$0
HEARTS Office	$0	$0	$0	$0	$0	$0	$0	$0
Internal Review - Audit Compliance	$0	$0	$0	$0	$0	$0	$0	$0
Legal Office	$0	$0	$0	$0	$0	$0	$0	$0
Resource Management	$12,791	$1,023	$0	$0	$1,262,699	$0	$0	$1,276,513
Contracting	$24,891	$0	$0	$0	$0	$0	$234	$25,125
Engineering Services	$243,029	$62,754	$40,064	$1,141,040	$502,233	$64,998	$64,286	$2,118,404
Production Control	$500,876	$323,529	$357,756	$267,538	$93,878	$178,828	$314,660	$2,037,065
Aircraft Production	$198,677	$30,972	$456,277	$85,704	$29,909	$68,170	$43,864	$913,573
Aircraft Process Support	$36,274	$5,399	$41,927	$5,281	$443	$11,129	$7,528	$107,981
Engine Production	$36,578	$19,155	$118,559	$14,408	$5,117	$14,955	$7,475	$216,247
Power Train	$6,916	$0	$23,318	$10,113	$0	$3,695	$4,141	$48,183
Avionics and Accessories	$36,197	$845	$16,777	$15,265	$3,258	$10,322	$0	$82,664
Manufacturing	$74,215	$30,240	$59,917	$60,520	$19,458	$34,055	$52,987	$331,392
Strategic Planning	$24,696	$24,471	$8,425	$5,134	$2,379	$5,172	$1,391	$71,668
Information Management	$14,099	$4,508	$892	$4,508	$2,229	$8,743	$1,338	$36,317
Quality and Production Support	$447,136	$16,159	$5,523	$2,899	$14,682	$5,685	$26,979	$519,063
Industrial Risk Management	$1,018	$222	$0	$0	$0	$0	$0	$1,240
Personnel	$5,414	$0	$0	$0	$6,561	$0	$4,374	$16,349
TOTAL	$1,662,807	$519,277	$1,129,435	$1,612,410	$1,942,846	$405,752	$529,257	$7,801,784

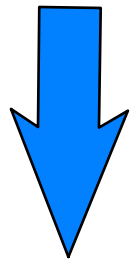*What does it cost CCAD to manage supply?*

Next Steps →

Next Steps

Next Steps

Activity-Based Management vs Activity Based Costing

Two tools to address complexity head on:

ABC

> A method that assigns cost to activities based on their use of resources, and assigns cost to cost objects based on their use of activities

ABM

> A process of focusing on the management of activities to identify and drive improvement opportunities

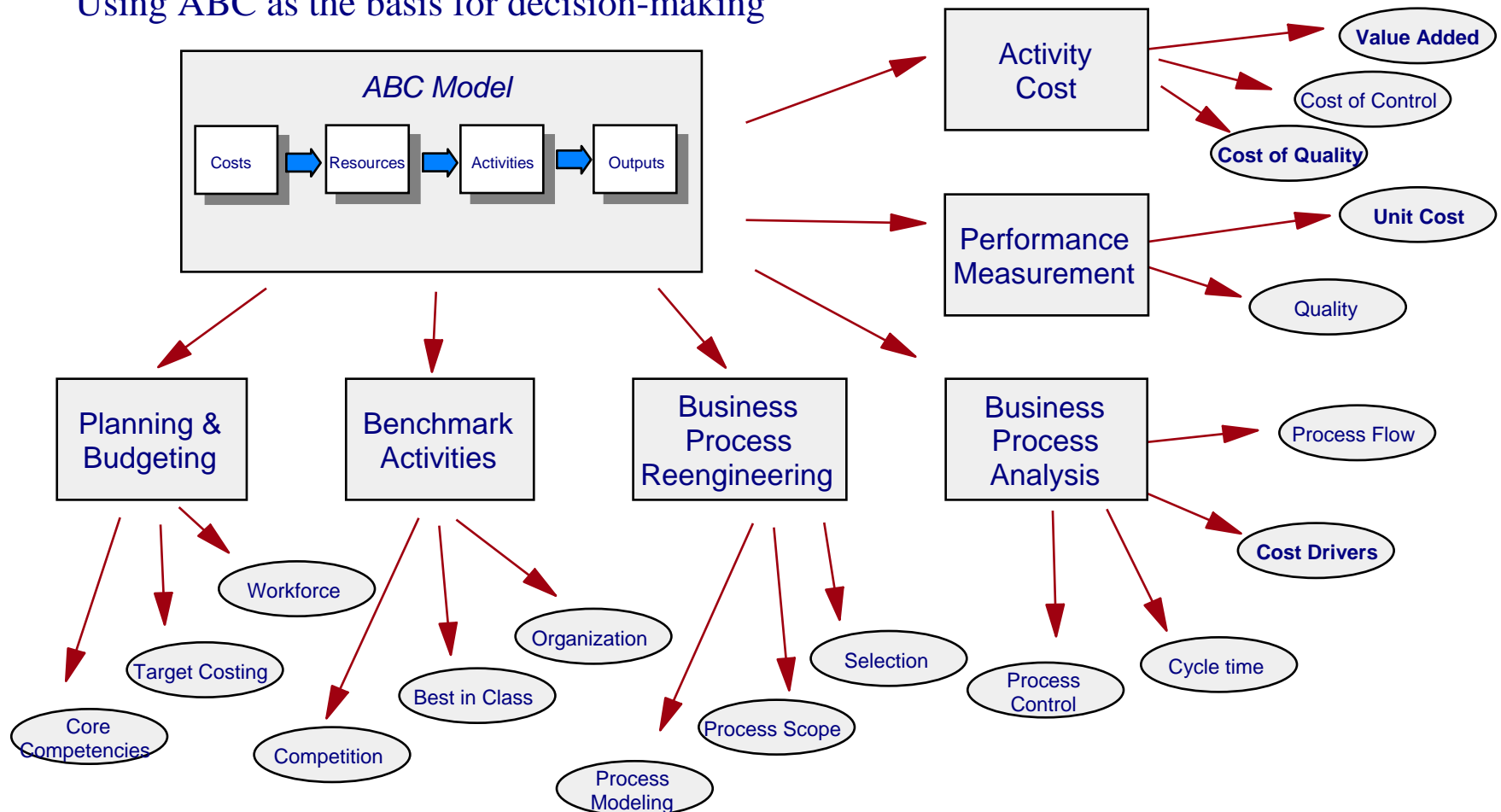*Managing activity-based information*

ABC Team

- Implementation of a Full-Time ABC Team

- Purchase of Commercial ABC Software (EasyABC OROS)

- Software Conversion and Validation

- Update Cost Model to Full-Year Costs

- Update Resource Drivers

    - High-Level Labor Validation Surveys

    - Review/Update Direct Account Allocations

- Update Activity Volumes/Unit Costs

- Outline Steps for Product Costing

ABC Team

Next Steps in Activity-Based Management

Using ABC as the basis for decision-making

ABC Model

Costs → Resources → Activities → Outputs

Activity Cost
- Value Added
- Cost of Control
- Cost of Quality

Performance Measurement
- Unit Cost
- Quality

Planning & Budgeting
- Workforce
- Target Costing
- Core Competencies

Benchmark Activities
- Organization
- Best in Class
- Competition

Business Process Reengineering
- Selection
- Process Scope
- Process Modeling

Business Process Analysis
- Process Flow
- Cost Drivers
- Process Control
- Cycle time

Using ABC data

Implementing ABM →

Cost Drivers Identified

Poor Management/Leadership Planning and Support
Lack of Communication/Cooperation
Reorganizations
Obsolete or Inadequate Equipment/Tools
Incompetent Employees/Poor Employee Attitudes
Lack of Personnel/Permanent Workers
Inadequate Training/Incorrect Skill Sets
Inadequate Technical Data and Work Instructions
Inadequate Procedures/Standardization
Chasing Parts
Lack of Parts/Long Lead Time for Parts
Excessive Paperwork
Too Many Meetings